# JOURNAL OF Colloid and Interface Science


**EDITOR-IN-CHIEF**

Darsh T. Wasan
*Illinois Institute of Technology, Chicago*

**CO-EDITORS**

Arthur T. Hubbard
*University of Cincinnati, Ohio*

Josip P. Kratohvil
*Clarkson University, Potsdam, New York*

**ADVISORY BOARD**

J. C. Berg
*Seattle, Washington*

M. A. Blesa
*Buenos Aires, Argentina*

D. Y. C. Chan
*Parkville, Vic., Australia*

J. Czarnecki
*Edmonton, Alberta, Canada*

J. C. Eriksson
*Stockholm, Sweden*

F. M. Goñi
*Bilbao, Spain*

W. I. Higuchi
*Salt Lake City, Utah*

H. Hoffmann
*Bayreuth, Germany*

P. F. Low
*West Lafayette, Indiana*

P. F. Luckham
*London, United Kingdom*

K. Motomura
*Fukuoka, Japan*

V. M. Muller
*Moscow, Russia*

E. Pefferkorn
*Strasbourg, France*

W. H. van Riemsdijk
*Wageningen, The Netherlands*

D. A. Saville
*Princeton, New Jersey*

J. F. Scamehorn
*Norman, Oklahoma*

J. C. Slattery
*College Station, Texas*

K. I. Tanaka
*Tokyo, Japan*

Victor K. La Mer, Editor 1946–1965
Albert C. Zettlemoyer, Co-Editor 1965–1987
Milton Kerker, Co-Editor 1965–1987, Editor 1987–1992



**Volume 167, 1994**

ACADEMIC PRESS, INC.
Harcourt Brace & Company
San Diego New York Boston London Sydney Tokyo Toronto

Copyright © 1994 by Academic Press, Inc.
All rights reserved

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

The appearance of the code at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use, or for the personal or internal use of specific clients. This consent is given on the condition, however, that the copier pay the stated per copy fee through the Copyright Clearance Center, Inc. (222 Rosewood Drive, Danvers, Massachusetts 01923), for copying beyond that permitted by Sections 107 or 108 of the U. S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. Copy fees for pre-1994 articles are as shown on the article title pages; if no fee code appears on the title page, the copy fee is the same as for current articles.

0021-9797/94 $6.00

MADE IN THE UNITED STATES OF AMERICA

This journal is printed on acid-free paper.

# Contents of Volume 167

## Number 1, October 1, 1994


1 Adsorption Heterogeneity and Thermodynamic Driving Forces in Anion Exchange Equilibria of Cytochrome $b_5$
*Davinder S. Gill, David J. Roush, and Richard C. Willson*

8 Kinetic Model for the Simultaneous Processes of Flocculation and Coalescence in Emulsion Systems
*Krassimir D. Danov, Ivan B. Ivanov, Theodor D. Gurkov, and Rajendra P. Borwankar*

18 Investigation of Amine-Catalyzed Alkoxysilane-Modified Cab-O-Sil by Drift Spectroscopy
*Gregory R. Bogart and Donald E. Leyden*

27 Investigation of Amine-Catalyzed Gas Phase Adsorption Silylation Reactions with Alkoxysilanes
*Gregory R. Bogart and Donald E. Leyden*

35 Approximate Analytical Expressions for the Properties of an Electrical Double Layer with Asymmetric Electrolytes: Cylindrical and Spherical Geometries
*Jyh-Ping Hsu and Yung-Chih Kuo*

47 Capillary Image Forces. I. Theory
*Peter A. Kralchevsky, Vesselin N. Paunov, Nikolai D. Denkov, and Kuniaki Nagayama*

66 Capillary Image Forces. II. Experiment
*Orlin D. Velev, Nikolai D. Denkov, Vesselin N. Paunov, Peter A. Kralchevsky, and Kuniaki Nagayama*

74 Effect of Heterocoagulation on the Rheology of Suspensions Containing Aluminum Hydroxycarbonate and Magnesium Hydroxide
*William J. McLaughlin, Joe L. White, and Stanley L. Hem*

80 Surface Diffusion in Phospholipid Foam Films. 1. Dependence of the Diffusion Coefficient on the Lipid Phase State, Molecular Length, and Charge
*Zdravko I. Lalchev, Peter J. Wilde, and David C. Clark*

87 Calorimetric Investigation of the Solubilization of Water-in-Sodium Dodecylbenzenesulfonate Reversed Micelles and Water-in-Oil Microemulsions in Mixed Solvent of *n*-Heptane and *n*-Pentanol
*Guoxing Gu, Wenqing Wang, and Haike Yan*

94 Effect of Interfacial Concentration Gradients of Insoluble Surfactants on Local Film-Thinning
*Haihua Shen and Stanley Hartland*

104 Protein Fouling of Track-Etched Polycarbonate Microfiltration Membranes
*Eve M. Tracey and Robert H. Davis*

117 Size Estimation of Cylindrical Uniform Pores on Solid Surfaces by Adsorption of *n*-Butylbenzene Vapor and Krypton Gas
*Akira Nonaka*

124 Multiblock Copolymers and Colloidal Stability
*Christopher M. Wijmans, Frans A. M. Leermakers, and Gerard J. Fleer*

135 Electrospray Atomization of Electrolytic Solutions
*Aaron J. Rulison and Richard C. Flagan*

146 Electrostatic Effect on the Hydration Layer of Colloidal Silica Particles
*Shigeo Sasaki and Hiroshi Maeda*

150 Spreading of Acylglycerols on Aqueous Surfaces at Equilibrium
*Juan M. Rodríguez Patino and Rosa M. Martín Martínez*

159 Micelle–Vesicle Transition of Nonionic Surfactant–Cholesterol Assemblies Induced by Octyl Glucoside: A Time-Resolved Fluorescence Study of Dehydroergosterol
*M. Seras, J. Gallay, M. Vincent, M. Ollivon, and S. Lesieur*

172 Effect of Inorganic Electrolyte Concentration on Anionic–Cationic Adsorption Films. 4. Dodecylpyridinium Bromide + Sodium Octylsulfonate + Sodium Bromide
*Danuta Góralczyk*

181 A Study of the Binding of Dimethyldodecylamine Oxide by β-Cyclodextrin Using Surface Tension Measurements
*Melda Tunçay and Sherril D. Christian*



1 171HI XL
2/95 31249-202 280

186 Protolytic Equilibria of Ligands Immobilized at Rigid Matrix Surfaces: A Theoretical Study
*Boris V. Zhmud and Alexander A. Golub*

193 Adsorption–Desorption Kinetics at Liquid Surfaces *Oleg V. Bychuk and Ben O'Shaughnessy*

***NOTES***

204 Preparation of Composite Ultrafine Particles Consisting of Different Kinds of Particles in a Gas
*Akihiro Gotoh and Humikazu Ikasaki*

207 Influence of Surfactant Structure on Wettability Modification of Hydrophobic Granular Surfaces
*Ramesh Varadaraj, Jan Bock, Neil Brons, and Steve Zushma*

211 Prediction of Interfacial Tensions between Ternary Solutions of Chlorohydrocarbons and Water
*Carol D. Rugge and Robert C. Ahlert*

214 Effects of Inertia on the Rupture Process of a Thin Liquid Film *Jun-Liang Chen and Chi-Chuan Hwang*

217 Examination of Neumann's Equation-of-State for Interfacial Tensions *Jaroslaw Drelich and Jan D. Miller*

***LETTERS TO THE EDITOR***

221 Elastic and Plastic Response of Colloidal Crystals Subjected to Alternating Inhomogeneous Electric Fields
*Thomas Palberg and Mathias Würth*

224 On the Singularity in the Dubinin Adsorption Isotherm *Narasimhan Sundaram*

## Number 2, October 15, 1994

227 The Mechanical Surface Tension and Stability of Minimal Surface Structures
*Jan Christer Eriksson and Stig Ljunggren*

232 The Effect of Hydrodynamic Flow Field on Colloidal Stability
*M. R. Greene, D. A. Hammer, and W. L. Olbricht*

247 Surface Properties of Protein Alcoholic Solutions. I. Surface Tension
*A. Dussaud, G. B. Han, L. Ter Minassian-Saraga, and M. Vignes-Adler*

256 Surface Properties of Protein Alcoholic Solutions. II. Surface Dilational Rheology
*A. Dussaud and M. Vignes-Adler*

266 Surface Properties of Protein Alcoholic Solutions. III. Aging Effect *A. Dussaud and M. Vignes-Adler*

275 Measurement of the Detachment of LB Films from a Piezoelectric Quartz Plate at the Air–Water Interface
*Katsuhiko Ariga and Yoshio Okahata*

281 Stability Calculations of $TiO_2$ Nonaqueous Suspensions: Thickness of the Electrical Double Layer
*B. Siffert, A. Jada, and J. Eleli-Letsango*

287 The Enrichment–Depletion Duality as an Indicator of Critical Wetting in Polymer Blends
*Rocco A. Jerry and Ashim Dutta*

294 Competing Adsorption and Micellization of Diblock Copolymers: Effects of Colloidal Sizes
*Xia Qiu and Zhen-Gang Wang*

301 Transient Deposition of Colloidal Particles in Heterogeneous Porous Media
*Lianfa Song and Menachem Elimelech*

314 Collapse of Apo- and Magnetoferritins at the Air–Water Interface *Shuqian Xu and Srinivasan Damodaran*

320 Dynamic Surface Tension of Solutions of Surfactant Mixtures. 1. Diffusion-Convective-Controlled Adsorption
*Leonid K. Filippov*

332 Precipitation of Mixtures of Anionic and Cationic Surfactants. III. Effect of Added Nonionic Surfactant
*Bor-Jier Shiau, Jeffrey H. Harwell, and John F. Scamehorn*

346 Dynamic Aspects of Bridging Flocculation Studied Using Standardized Mixing
*Y. Adachi, M. A. Cohen Stuart, and R. Fokkink*

352 The Point of Zero Charge of $CeO_2$ *Luis Antonio De Faria and Sergio Trasatti*

358 Morphology Control of Lead Carboxylate Powders via Anionic Substitutional Effects
*Otto Carl Wilson, Jr., and Richard E. Riman*

371 The Correlation between the Swelling Transition and the Hydrophobicity on Poly(2-hydroxyethyl methacrylate) Hydrogel Surface in Aqueous Urea Solutions
*Seung Koo Kang, Jung Hwan Yang, Yong Kiel Sung, and Mu Shik Jhon*

378 Dynamic Interfacial Properties of Surface-excess Films of Phospholipids and Phosphonolipid Analogs. I. Effects of pH *Huicai Liu, R. Z. Lu, J. G. Turcotte, and R. H. Notter*

391 Dynamic Interfacial Properties of Surface-excess Films of Phospholipids and Phosphonolipid Analogs. II. Effects of Chain Linkage and Headgroup Structure *Huicai Liu, J. G. Turcotte, and R. H. Notter*

401 Influence of the Dispersed Phase Distribution on the Electrical Conductivity of Liquid O/W Model and Dairy Emulsions *Olivier Robin, Michel Britten, and Paul Paquin*

414 Metastable Equilibrium Solubility Behavior of Carbonated Apatites
*Jer Hsu, Jeffrey L. Fox, William I. Higuchi, G. Lynn Powell, Makoto Otsuka, Arif Baig, and Racquel Z. LeGeros*

424 Hydrogen Isomerization by a Silica/Ferric Oxide Catalyst Obtained by Calcination of Composite with Poly(vinyl alcohol) *Fumio Suzuki, Kenji Iwakura, Kakuya Kuroume, and Kenji Onozato*

428 Morphological Study of Metal Colloids Employed as Substrate in the SERS Spectroscopy
*S. Sánchez-Cortés, J. V. García-Ramos, and G. Morcillo*

437 Electrorheology of a Model Colloidal Fluid *James E. Martin, Douglas Adolf, and Thomas C. Halsey*

453 Kinetics of Tunnel-Assisted Multilayer Chemisorption on Homogeneous Surfaces *G. F. Cerofolini*

457 Kinetic Studies of Crystal Growth of Sparingly Soluble Salt by the Pressure-Jump Technique. 2. Lead Chloride
*Tadaomi Inoue, Kuen-Sen Chang, Cheng-Fang Lin, and Tatsuya Yasunaga*

***NOTES***

460 Adsorption of Polymer on Dispersion Particles *Jyh-Ping Hsu and Der-Po Lin*

464 Temperature Dependence of Interfacial Tension between Normal Organic Acids and Water
*G. Chavepeyer, C. De Saedeleer, and J. K. Platten*

467 Monitoring of the Dispersion of Aggregated Red Blood Cells by Flow/Hyperlayer Field-flow Fractionation
*Bhajendra N. Barman*

470 ***AUTHOR INDEX FOR VOLUME 167***

NOTICE

The Subject Index for Volume 167 will appear in the December 1994 issue as part of a cumulative index for the year 1994.